APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/447,256	11/23/1999	NOBUYOSHI NAKAJIMA	2091-0205P	3582

7590 07/14/2006	EXAMINER
BIRCH STEWART KOLASCH & BIRCH LLP	LAROSE, COLIN M

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DATE MAILED: 07/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *17 April 2006*.

2a) ☒ This action is **FINAL.**   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-6 and 13-18* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-6 and 13-18* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date *3/8/06*.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Arguments and Amendments

1.   Applicant's amendments and arguments filed 17 April 2006, have been entered and made

of record.

Response to Arguments

2.   Applicant has amended claims 1, 3, and 5 to denote that the detecting step "includes

detecting edges in the face pattern and binarizing the original image signal corresponding to the

face pattern," and that the pattern matching process is performed "using the binarized face

candidate region." These features are not fairly disclosed or suggested by the combination of

Kobori and Yamamoto. Therefore, the previous rejections of claims 1, 3, and 5 have been

withdrawn.

        However, in view of newly-discovered prior art, new grounds of rejection have been

established for claims 1, 3, and 5, and their corresponding dependent claims below.

Claim Rejections - 35 USC § 103

3.   The text of those sections of Title 35, U.S. Code not included in this action can be found

in a prior Office action.

4.   Claims 1, 3, 5, and 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over

and U.S. Patent 5,109,281 by Kobori et al. ("Kobori") in view of U.S. Patent 6,049,674 by

Yamamoto et al. ("Yamamoto") and U.S. Patent 5,905,807 by Kado et al. ("Kado").

        Regarding claim 1, Kobori discloses an image processing method (figure 3) for obtaining

a layout image signal representing a layout image, in which a plurality of person images are laid

out, from a plurality of original image signals, each of the original image signals representing a

person image, in which a face pattern of a person is embedded, the method comprising the steps

of:

i) detecting face information from each of the original image signals, said face

information representing a position of the face pattern of the person in the person image

represented by each original image signal;

[In figure 3, a camera is set to image the left of two face images ("c-1", figure 2). The left

face image signal is stored in memory, and the position of the face is detected (column 4, lines

50-51). This process is also repeated for the right face image.]

iii) performing a face pattern normalizing process on each of the original image signals

based on said detected face information, a plurality of normalized image signals being obtained

from said face pattern normalizing process;

[After the position of the left face image signal is detected, it is determined whether the

positioning of the object is satisfactory, and based on the determination that the positioning is

unsatisfactory, the imaging conditions are adjusted, and the adjusted image signal is stored

(column 4, lines 53-57). This process repeats until the face is centered in the image. In other

words, in accordance with the detected positioning information, the face image signal is

continually adjusted until it becomes normalized (i.e. centered) in the image. This normalizing

process is also repeated for the right face image signal.]

iv) laying out a plurality of images, which are represented by said normalized image

signals, in a predetermined layout such that the plurality of image signals are laid out side by

side, and obtaining the layout image signal representing the thus formed layout image (see e.g.
figure 8: image signal with normalized faces side by side).

Kobori is silent to performing a pattern matching process, as claimed, to calculate an
amount of displacement or size difference from a normalized value, and then using the
displacement or difference for normalizing the face. Instead, Kobori relies on trial and error for
normalizing the face. The position of the face is checked and repeatedly adjusted until it is
satisfactory (figure 3).

Yamamoto discloses a system (e.g. figure 17) similar to that of Kobori wherein facial
images are obtained and normalized for the purposes of printing. In Yamamoto's system, a user
sits in front of a camera in the same manner as in Kobori's system. The system captures an
image of the user's face and detects the contour of the face (column 9, lines 39-40). A pattern
matching process is then carried out whereby the detected contour is compared to a reference
contour to determine the amount of displacement therefrom (column 9, lines 40-41). Based on
the results of the comparison, an optimum magnification is produced and used to normalized the
face to a predetermined size (column 9, lines 41-50), thereby producing an image of a
normalized face.

It would have been obvious to one of ordinary skill in the art at the time of the invention
to modify Kobori by Yamamoto to perform a automatic facial detection, pattern matching, and
normalization to generate normalized facial images, as claimed, since both Kobori and
Yamamoto are directed to video printing systems that produce normalized faces for printing
purposes, and Yamamoto teaches that the detection, pattern matching, and normalization are

conventionally implemented automatically. Therefore, Yamamoto's processes for normalizing

the face do not rely on trial and error as in Kobori's system.

The combination of Kobori and Yamamoto, however, does not fairly disclose or suggest

that the detecting step "includes detecting edges in the face pattern and binarizing the original

image signal corresponding to the face pattern," and that the pattern matching process is

performed "using the binarized face candidate region."

Yamamoto teaches deriving the contours of a face, and then using the contours to

perform pattern matching with the contours of a reference face. See column 9/38-42 and column

10/15-20. Thus, while Yamamoto does teaches "detecting edges" of the face, it does not teach

"binarizing the original image signal corresponding to the face patterns," as claimed.

Kado discloses a system for detecting facial features in an image. In particular, Kado

teaches how to detect face candidate regions that indicate the contours of a face contained in an

image. Figure 2 illustrates "cheek searching regions" that are generated in order to locate the

outline of the face near the cheek region. According to figure 1, edge detection 2 is performed on

the image, which is then binarized 3 to produce a binary image signal that denotes the contours

of the face around the cheek region. Pattern matching between predetermined regions in the

binarized image and stored template shapes are performed at block 5 in order to identify the

feature points of the cheek outlines in the binarized image.

It would have been obvious to one of ordinary skill in the art at the time of the invention

to modify Kobori and Yamamoto by Kado in order to detect a face candidate region by

"detecting edges in the face pattern and then binarizing the image" so that the binarized face

region can be "used for performing pattern matching," since Kado teaches that detecting the

contours of a face in an image from which edges have been extracted "is a relatively stable way

to extract the position of a facial element even when the lighting conditions vary," and binarizing

the image according to the detected edges "remov[es] noise from the extracted edges of the

image" (see column 2/1-17). Thus, while Yamamoto merely discloses deriving the contours of a

face and then using the contours to perform pattern matching with the contours of a reference

face, Kado teaches that contours of a face are advantageously derived by detecting edges of the

face pattern and then binarizing the face image in order to generate the positions of the outlines

of the face that are stable amid varying lighting conditions and relatively free from noise. Kado

further teaches that the extracted binary contours of the face are suitable for performing pattern

matching to reference features, in accordance with the teachings of Yamamoto, where the

derived contour of the face is matched to a reference contour.

Regarding claims 3 and 5, the combination of Kobori and Yamamoto discloses the

corresponding apparatus and computer-readable recording medium to perform the above steps

(see e.g. figure 1 of Kobori and figure 17 of Yamamoto).

Regarding claims 13, 15, and 17, Kobori teaches normalizing each of the person images

to the same size (see e.g. figure 8 wherein the faces are substantially the same size).

Regarding claims 14, 16, and 18, Kobori discloses the laid out person images correspond

to original images signals and the normalized images are based solely on the corresponding

original images signals (i.e. each of Kobori's person images are processed separately so that

there is direct correspondence to the laid out images and normalized images).

5.   Claims 2, 4, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over and

U.S. Patent 5,109,281 by Kobori et al. ("Kobori") in view of U.S. Patent 6,049,674 by

Yamamoto et al. ("Yamamoto") and U.S. Patent 5,905,807 by Kado et al. ("Kado"), and further

in view of U.S. Patent 5,850,463 by Horii.

Regarding claims 2, 4, and 6, Yamamoto teaches that the normalization is carried out by

e.g. enlarging or reducing the face to be in accordance with a stored reference face (column 9,

lines 45-50). However, Yamamoto is silent to performing the face pattern normalization by

utilizing an affine transformation.

Horii discloses a method for processing facial images. In particular, Horii teaches that it

is conventional to utilize an affine transformation in order to match and normalize a detected

face with a standard face (column 10, lines 37-46). It would have been obvious to one of

ordinary skill in the art at the time of the invention to modify Kobori and Yamamoto by Horii to

utilize an affine transformation for the normalizing process, since Horii teaches that

normalization of a face is advantageously carried out by an affine transformation, which is more

versatile than simple enlargement and reduction in that is allows a face to be rotated and

translated, in addition to enlarged or reduced.

Conclusion

6.   Applicant's amendment necessitated the new ground(s) of rejection presented in this

Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this

final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Colin M. LaRose whose telephone number is (571) 272-7423. If

attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge

Wu, can be reached on (571) 272-7429. The fax phone number for the organization where this

application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).). If you

would like assistance from a USPTO Customer Service Representative or access to the

automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Any inquiry of a general nature or relating to the status of this application or proceeding can also

be directed to the TC 2600 Customer Service Office whose telephone number is (571) 272-2600.

Colin M. LaRose
Group Art Unit 2624
7 July 2006

VIKKRAM BALI
PRIMARY EXAMINER